

THIS SPECIFICATION COVERS MAINTENANCE ONLY.
CABLES USED IN NEW CONSTRUCTION SHOULD COMPLY WITH TDMIS-9251.

1.0 SCOPE

This specification covers shielded cables rated at 15 kV. These cables may be of discharge free or discharge resistant design. This cable is intended for installation in duct lines, risers, aerial installation (supported by a messenger) or for direct burial. Cables shall be designed to operate continuously at a conductor temperature of 105°C for normal operation, 140°C under emergency conditions and 250°C under short circuit conditions.

2.0 APPLICABLE PUBLICATIONS AND STANDARDS

The cables in this specification shall meet and/or exceed all requirements of the latest editions of the applicable standards listed below. The conductor shall further meet and/or exceed those applicable standards not stated herein but referenced by the below standards.

- 2.1. AEIC CS8 – Specification for Extruded Dielectric Shielded Power Cables Rated 5 through 46 kV
- 2.2. ASTM B3 – Standard Specification for Soft or Annealed Copper Wire
- 2.3. ASTM B8 – Standard Specification for Concentric-Lay-Stranded Copper Conductors, Hard, Medium-Hard, or Soft
- 2.4. ICEA S-93-639 – Standard for 5-46 kV Shielded Power Cable for Use in the Transmission and Distribution of Electric Energy
- 2.5. ICEA S-97-682 – Standard for Utility Shielded Power Cables Rated 5 through 46 kV
- 2.6. ICEA T-31-610 – Test Method for Conducting Longitudinal Water Penetration Resistance Tests on Blocked Conductors
- 2.7. ICEA T-32-645 – Test Method for Establishing Volume Resistivity Compatibility of Water Blocking Components With Extruded Semiconducting Shield Materials

3.0 PRODUCT REQUIREMENTS

3.1. General Requirements

- 3.1.1. Cables shall be manufactured and tested in compliance with ICEA S-97-682, and the ASTM latest editions.
- 3.1.2. All phases of cable manufacturing and testing shall be accomplished with care and good workmanship.

3.2. **Conductors**

- 3.2.1. Conductors shall be single conductor, copper, compressed round, concentric lay, class “B” stranding.
- 3.2.2. Conductors may be coated or uncoated annealed, in accordance with ASTM B-8.
- 3.2.3. Conductors shall meet the electrical resistance requirements of ICEA S-97-682.
- 3.2.4. The interstices of the stranded conductor shall be filled with a sealant to impede longitudinal water penetration; however, the outer surface of the conductor shall be free from the sealant compound. The sealant must be compatible with the conductor shield in accordance with ICEA T-32-645. Further, longitudinal water penetration shall be tested in accordance with ICEA T-31-610.

3.3. **Conductor Shield**

- 3.3.1. Conductor shield shall be an extruded thermosetting semi-conducting or high permittivity polymeric material.
- 3.3.2. The conductor shield shall meet the requirements of the ICEA S-97-682.
- 3.3.3. The conductor shield thickness shall be in accordance with the latest editions of ICEA S-97-682.
- 3.3.4. The conductor shield shall be easily removed from the conductor and securely bonded to the overlying insulation.

3.4. **Insulation**

- 3.4.1. The insulation shall be a premium quality, heat, moisture, ozone, and corona resistant tree-retardant cross-linked polyethylene (TRXLPE) or ethylene propylene rubber (EPR) and conform to the requirements of ICEA S-97-682.
- 3.4.2. Cable insulation shall be rated for normal operation at 15 kV.
- 3.4.3. The nominal insulation thickness shall be at the 133% level in accordance with AEIC CS8.

3.5. **Insulation Shield**

- 3.5.1. Insulation shield shall be extruded black semi-conducting polymeric material. Shield shall be clearly marked along its entire length to insure its removal at terminations and joints. Insulation shield diameters and thicknesses shall be in accordance with AEIC CS8 and ICEA S-97-682, respectively.

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3.5.2. The insulation shield shall be applied in a manner to facilitate the removal of all conducting material without externally applied heat. Stripping tensions shall comply with ICEA S-97-682.

3.6. **Metallic Shield**

The metallic shield structure shall consist of one annealed, bare copper tape helically applied or two annealed, bare copper tapes intercalated and helically applied over the insulation shield. The tape(s) shall have a minimum thickness of 4 mils with a minimum overlap of 25%. The shield shall meet the applicable requirements of ICEA S-93-639.

3.7. **Jacket**

The jacket shall be black, non-conducting polyvinyl chloride (PVC). It shall be tightly extruded over the metallic shield and be free stripping. The jacket shall meet the requirements of ICEA S-93-639, including minimum thickness and required markings.

3.8. **Neutral Cable**

As detailed in Table 1, all cables shall be duplexed (for a single conductor) or quadruplexed (for three conductors) with a separate copper 600 V neutral that is the same size as the phase conductor. The neutral cables shall meet all requirements of TDMIS-9253: Secondary Cable – Copper. Single conductors that are 750 MCM or larger do not require a separate neutral.

3.9. **All Identification**

3.9.1. Cables shall be identified in accordance with ICEA S-93-639.

3.9.2. Jacket to be marked with three longitudinal red stripes spaced 120° apart.

3.9.3. In addition, each phase conductor of a parallel assembly shall be marked A, B, or C for phase identification.

3.9.4. Sequential footage markings are to be applied to the jacket at two foot intervals. Both beginning and tail end footage markings are to be stenciled on the reel flange in addition to being recorded on the reel tag.

3.10. **Test and Inspection**

3.10.1. Cables shall be tested and inspected in accordance with AEIC CS8.

3.10.2. Certificates of Compliance shall be supplied and indicate the cables have successfully passed all tests in accordance with AEIC standards. Certificates shall be included with the packing slips for each reel.

3.11. **Cable Ends**

Cable ends shall be sealed on each individual cable to protect and prevent the entrance of moisture during shipping and storage.

3.12. **Packaging**

3.12.1. **Cable reels**

- a) All reels shall conform to the requirements for class 2 reels as defined in NEMA WC 26.
- b) The maximum flange diameter shall be 96”.
- c) The maximum transverse length shall be 54”.

3.12.2. Cable length shall have a tolerance of -5% / +10%.

3.12.3. Each reel shall be marked with two durable, non-fading labels attached securely to each flange, plainly stating purchase order number, shipping length in feet of cable on reel, type and size of conductor, thickness of insulation, voltage rating, tare weight, DOP Division ID, and beginning and end footage sequence numbers.

3.12.4. Reels shall be upright and securely blocked in position so that they will not shift during transit.

3.13. **Total Weight**

The maximum shipping weight of any reel is not to exceed 14,000 lbs. due to ratings of reel trailers.

Table 1: Schedule of Cables

DIV ID	Conductor		600-V Neutral Conductor	Max. Diameter Over Insulation (in.)	Max. Nominal OD (in.)	Approximate MV-105 Ampacity (A)
	Size	Qty.	Size			
50398	1 AWG	1-1/C	#2 AWG	0.76	1.00	165
50399	1 AWG	3-1/C	#2 AWG	0.76	1.00	165
50400	2/0 AWG	3-1/C	2/0 AWG	0.87	1.11	245
50401	350 MCM	3-1/C	350 MCM	1.11	1.38	415
50402	500 MCM	3-1/C	500 MCM	1.22	1.50	500
50403	750 MCM	1-1/C	None	1.40	1.74	610
50404	750 MCM	3-1/C	750 MCM	1.40	1.74	610
50405	1000 MC	1-1/C	None	1.56	1.92	690